



SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2024-2025

SLOT: G1

Programme Name & Branch
Course Code and Course Name
Faculty Name(s)
Class Number(s)
Date of Examination
Exam Duration

: BTECH - Computer Science and Engineering and Business Systems
: CBS1003 and Data Structures and Algorithms
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: VL2024250505135, VL2024250505129
: 02-02-2025
: 90 minutes

Maximum Marks: 50

Answer All Questions

Q. No	Question	Marks	CO	BL
1.	a) Solve the following recurrence equation using Master Theorem $T(n) = T(n/2) + 1$, where $n=2^k$ for all $k \geq 0$	4	2	2
	b) Solve the following equation using the substitution method or Iterative (Back substitution method) $T(n) = T(n/3) + T(2n/3) + cn$ where c is a constant and n is the input size.	6		
2.	a) Solve the following recurrence equation using the recursive tree method $T(n) = 3T(n/4) + cn^2$, where c is a constant and n is the input size.	7	2	4
	b) Consider the following code snippet and compute the total cost function. Assume the code is free from any syntax error and is running properly. <pre>int j = 0; for (i=0; j ≤ n; i++) { j=i+j; printf("I am a student of VIT"); }</pre>	3		
3.	Convert the infix expression $(a * (b + c)) + (b / d) * a$ to postfix expression using stack.	10	2	2
4.	Develop a pseudocode and illustrate with neat diagrams to group all odd nodes followed by the even nodes for the given singly linked list 2,1,3,5,6,4,7	10	2	4
5.	Note : Consider the first node is odd and the second node is even and so on Convert the following general tree to binary tree. Perform the preorder, inorder and postorder traversals on the resultant binary tree.	10	3	2

